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## UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND  
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

AUGUST 03, 2004

PTAS

GRAY, CARY WARE & FREIDENRICH LLP  
LISA A. HAILE, J.D., PH.D.  
4365 EXECUTIVE DRIVE, SUITE 1100  
SAN DIEGO, CA 92121-2133

\*102659861A\*

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 01/30/2004

REEL/FRAME: 014932/0829

NUMBER OF PAGES: 5

BRIEF: ASSIGNMENT OF ASSIGNEE'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNEE:  
DENISE, SUE K.

DOC DATE: 01/16/2004

ASSIGNEE:  
KERR, RICHARD

DOC DATE: 01/15/2004

ASSIGNEE:  
ROSENFELD, DAVID

DOC DATE: 01/15/2004

ASSIGNEE:  
HOLM, TOM

DOC DATE: 01/19/2004

ASSIGNEE:  
BATES, STEPHEN

DOC DATE: 01/12/2004

ASSIGNEE:  
FANTIN, DENNIS

DOC DATE: 01/14/2004

ASSIGNEE:

MMI GENOMICS, INC.  
1756 PICASSO AVENUE  
DAVIS, CALIFORNIA 95616

SERIAL NUMBER: 10750185

FILING DATE: 12/31/2003

PATENT NUMBER:

ISSUE DATE:

TITLE: COMPOSITIONS FOR INFERRING BOVINE TRAITS

MARY BENTON, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

1/30/04

02-03-2004



Docket No.: MMI1100-2

To the Honorable Commissioner for Patents:

102659861

Original documents or copy thereof.

## 1. Name of Conveying party(ies):

- a. Sue K. DeNise      d. Tom Holm  
 b. Richard Kerr      e. Stephen Bates  
 c. David Rosenfeld    f. Dennis Fantin

Additional name(s) of conveying party(ies) attached?  Yes  No

## 3. Nature of conveyance:

- Assignment       Merger  
 Security Agreement     Change of name  
 Other \_\_\_\_\_

Execution Date: a. January 16, 2004      d. January 19, 2004  
 b. January 15, 2004      e. January 12, 2004  
 c. January 15, 2004      f. January 14, 2004

## 2. Name and address of receiving Party(ies)

Name: MMI GENOMICS, INC.

Internal Address: \_\_\_\_\_

Street Address: 1756 Picasso AvenueCity: Davis State: CA Zip: 95616

## Additional name(s) &amp; address(es) attached?

 Yes  No

## 4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

## A. Patent Application No.(s)

10/750,185

## B. Patent No.(s)

Additional numbers attached?  Yes  No

## 5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Lisa A. Haile, J.D., Ph.D.  
GRAY CARY WARE & FREIDENRICH LLPStreet Address: 4365 Executive Drive, Suite 1100  
 City: San Diego State: CA Zip: 92121-21336. Total number of Applications and patents involved: 17. Total fee (37 CFR 3.41) \$ 40.00 Enclosed - Check No.: 552723 Authorized to charge any underpayment to Deposit Account No. 50-1355.

DO NOT USE THIS SPACE

## 9. Statement and signature:

*To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.*

Signature

January 27, 2004

Date

Lisa A. Haile, J.D., Ph.D.

Name of Person Signing

Registration No. 38,347

02/02/2004 MGETACHE 00000082 10750185

01 FC:8021

40.00

Total number of pages including cover sheet, attachments, and document: 5

ASSIGNMENT

This assignment ("Assignment") is made by Sue K. DeNise of Davis, California, Richard Kerr of Davis, California, David Rosenfeld of Sacramento, California, Tom Holm of Salt Lake City Utah, Stephen Bates of Davis, California and Dennis Fantin of Danville, California (collectively, the "Assignors") to Assignee, **MMI GENOMICS, INC.** ("Assignee"), having a place of business at 1756 Picasso Avenue, Davis, California 95616.

Recitals

A. Each of the Assignors has invented a new and useful invention entitled **COMPOSITIONS FOR INFERRING BOVINE TRAITS** for which an application for United States Letters Patent Application was filed **December 31, 2003** in the United States Patent and Trademark Office.

B. **Each of the Assignors authorizes and requests insertion of the serial number of the application when officially known:**

The United States Application Serial No.: 10/750,185;

C. Each of the Assignors believes the Assignors to be the original, first and joint inventors of the invention disclosed and/or claimed in the application for Letters Patent.

D. The parties desire to have a recordable instrument assigning from the Assignors to the Assignee the entire rights, title and interest in and to the invention, the application and all Letters Patent in the United States and throughout the world that may be granted or issued for the invention or that derive a right of priority from the application (including, without limitation, all divisional, continuation, continuation-in-part and continued prosecution applications thereof, and all reissues and reexaminations thereof, and all foreign counterparts thereof) (collectively, the "Invention Patents").

Agreement

NOW, THEREFORE, in accordance with the obligations to assign the Invention Patents and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, each of the Assignors agrees to the foregoing and as follows:

1. Each of the Assignors does and will sell, assign and transfer to Assignee, such Assignor's entire rights, title, and interest in and to each of the Invention Patents, including, without limitation, the rights to file foreign applications directly in the name of the Assignee and to claim for any such foreign applications any priority rights to which such applications are entitled under international conventions, treaties, or otherwise.

2. Each of the Assignors agrees that, upon request and without further compensation, but at no expense to such Assignor, such Assignor and such Assignor's legal representatives and assigns will do all lawful acts, including the execution of papers and the giving of testimony, that may be necessary or desirable for obtaining, sustaining, reissuing, or enforcing each of the Invention Patents in the United States and throughout the world, and for perfecting, recording, or maintaining the title of Assignee, and Assignee's successors and assigns, in and to each of the Invention Patents in the United States and throughout the world. In the event that Assignee is unable for any reason to secure any of the Assignors' signatures to any document that may be necessary or desirable for obtaining, sustaining, reissuing, or enforcing each of the Invention Patents in the United States and throughout the world, or for perfecting, recording, or maintaining the title of Assignee, and Assignee's successors and assigns, in and to each of the Invention Patents in the United States and throughout the world, each such Assignor hereby irrevocably designates and appoints Assignee and Assignee's duly authorized officers and agents as such Assignor's agents and attorneys-in-fact to act for and on such Assignor's behalf and instead of such Assignor to execute such document, all with the same legal force and effect as if executed by such Assignor.

**ATTORNEY DOCKET NO.:**  
**MMI1100-2**

3. Each of the Assignors represents and warrants that such Assignor has not granted and will not grant to others either (1) any rights, title or interest in and to any of the Invention Patents, or (2) any rights inconsistent with the rights granted herein.

4. Each of the Assignors authorizes and requests the Assistant Commissioner for Patents of the United States and the various counterparts thereof throughout the world to issue and/or grant any Letters Patent granted for each of the Invention Patents to Assignee, its successors and assigns, as the assignee of the entire interest in such Invention Patents.

5. This Assignment constitutes the entire agreement with respect to its subject matter and supersedes all prior or contemporaneous oral or written agreements concerning such subject matter. No waiver, amendment, or modification of this Assignment shall be effective against the Assignee, unless in writing executed by a duly authorized representative of the Assignee. This Assignment shall be governed in all respects by the laws of the United States of America and by the laws of the state/province of California, as such laws are applied to agreements entered into and to be performed entirely within California between California residents. Each of the parties irrevocably consents to the exclusive personal jurisdiction of the federal and state courts located in California, as applicable, for any matter arising out of or relating to this Assignment, except that in any action seeking to enforce any order or any judgment of such federal or state courts located in California, such personal jurisdiction shall be nonexclusive. A breach of any of the promises or agreements contained herein will result in irreparable and continuing damage to Assignee for which there will be no adequate remedy at law, and Assignee shall be entitled to injunctive relief and/or a decree of specific performance, and such other relief as may be proper.

**ATTORNEY DOCKET NO.:**  
**MMI1100-2**

IN WITNESS WHEREOF, each of the Assignors has executed this Assignment on the date(s) provided below.

Assignor : Sue K. DeNise

Date: January 16, 2004

Signature: Sue K. DeNise

Assignor : Richard Kerr

Date: JANUARY 15, 2004

Signature: Richard Kerr

Assignor : David Rosenfeld

Date: JANUARY 15, 2004

Signature: David Rosenfeld

Assignor : Tom Holm

Date: January 19, 2004

Signature: Tom Holm

Assignor : Stephen Bates

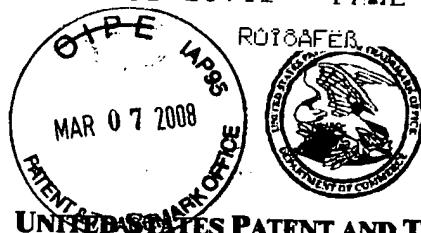
Date: January 18, 2004

Signature: Stephen Bates

Assignor : Dennis Fenton

Date: JANUARY 14, 2004

Signature: Dennis Fenton

**UNITED STATES PATENT AND TRADEMARK OFFICE**UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND  
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

AUGUST 09, 2006

PTAS

LISA A. HAILE, J.D., PH.D.  
4365 EXECUTIVE DRIVE, SUITE 1100  
DLA PIPER RUDNICK GRAY CARY US LLP  
SAN DIEGO, CA 92121-2133

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RECORDATION DATE: 08/08/2006

REEL/FRAME: 018074/0025  
NUMBER OF PAGES: 4

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).  
DOCKET NUMBER: MM11100-2

## ASSIGNOR:

MMI GENOMICS, INC.

DOC DATE: 10/27/2005

## ASSIGNEE:

METAMORPHIX, INC.  
8510-A CORRIDOR ROAD  
SAVAGE, MARYLAND 20763

## ASSIGNEE:

CARGILL, INCORPORATED  
15407 MCGINTY ROAD WEST  
MS/24  
WAYZATA, MINNESOTA 55391

018074/0025 PAGE 2

SERIAL NUMBER: 10750185

FILING DATE: 12/31/2003

PATENT NUMBER:

ISSUE DATE:

TITLE: COMPOSITIONS FOR INFERRING BOVINE TRAITS

ASSIGNMENT SERVICES BRANCH  
PUBLIC RECORDS DIVISION

R016AFEB

**PATENT ASSIGNMENT**

Electronic Version v1.1  
 Stylesheet Version v1.1

**08/08/2006  
 500136276**

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

**CONVEYING PARTY DATA**

Name	Execution Date
MMI Genomics, Inc.	10/27/2005

**RECEIVING PARTY DATA**

Name:	MetaMorphix, Inc.
Street Address:	8510-A Corridor Road
City:	Savage
State/Country:	MARYLAND
Postal Code:	20763

Name:	Cargill, Incorporated
Street Address:	15407 McGinty Road West
Internal Address:	MS/24
City:	Wayzata
State/Country:	MINNESOTA
Postal Code:	55391

**PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	10750185

CH \$40.00 10750185

**CORRESPONDENCE DATA**

Fax Number: (858)677-1465

*Correspondence will be sent via US Mail when the fax attempt is unsuccessful.*

Phone: (858) 638-6756

Email: aldon.griffis@dlapiper.com

Correspondent Name: Lisa A. Haile, J.D., Ph.D.

Address Line 1: 4365 Executive Drive, Suite 1100

Address Line 2: DLA Piper Rudnick Gray Cary US LLP

Address Line 4: San Diego, CALIFORNIA 92121-2133

ATTORNEY DOCKET NUMBER:

MMI1100-2

NAME OF SUBMITTER:

Lisa A. Haile, J.D., Ph.D.

Total Attachments: 2

source=MMI1100-2 Assignment (MMI Genomics, Inc. to Cargill, Inc. &amp; Metamorphix, Inc.)#page1.tif

source=MMI1100-2 Assignment (MMI Genomics, Inc. to Cargill, Inc. &amp; Metamorphix, Inc.)#page2.tif

## WORLDWIDE PATENT ASSIGNMENT

WHEREAS, MMI GENOMICS, INC., a Delaware corporation and wholly-owned subsidiary of MetaMorphix, Inc., a Delaware corporation (hereinafter referred to as the "Assignor"), has an invention relating generally to genetic markers and more specifically to polymorphisms associated with bovine traits, which said Assignor has caused an application for United States Letters Patent to be prepared, said application having been filed in the United States Patent and Trademark Office on December 31, 2002 (PCT/US 2003/041766 and MMI Docket No. MMI 1100) and entitled "Compositions, Methods, and Systems for Inferring Bovine Traits" (hereinafter the "'041766 Application";

WHEREAS, CARGILL, INCORPORATED, a Delaware corporation (hereinafter referred to as a "Co-Assignee" or as "Cargill"), in accordance with and subject to a joint research agreement between the two Co-Assignees, has acquired a joint right, title, and interest in and to said applications, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefore, including any and all renewals, reissues, and prolongations thereof;

WHEREAS, METAMORPHIX, INC., a Delaware corporation ("MMI"), and Cargill incorporated, a Delaware corporation, as Co-Assignees hereunder, shall be co-owners of the Patent Application.

NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and valuable consideration each paid by Cargill and MMI to Assignor and exchanged between them, the receipt and sufficiency of which is hereby acknowledged, Assignor hereby assigns, sells, and transfers, and has assigned, sold, and transferred to Cargill and to MMI, as Co-Assignees, their respective successors and assigns, each a joint right, title, and interest for the United States in and to the invention, the '041766 Application, and any patents which may be granted therefor, including any and all divisions, continuations, in whole or in part, substitutions, renewals, reissues, reexaminations, extensions, any application to which the '041766 Application claims priority from, and all applications claiming priority therefrom; and Assignor authorizes and requests the Commissioner of Patents and Trademarks to issue all patents for the invention, or patents resulting therefrom, insofar as their interest is concerned, jointly to the Co-Assignees; to have, hold, exercise, and enjoy, with all the rights, powers, privileges, and advantages in anywise arising therefrom or appertaining thereto, for and during the term or terms of any and all such patents when granted, for the use and benefit of said Co-Assignees, and said Co-Assignees' respective successors and assigns, in as ample and beneficial a manner as Assignor might or could have held and enjoyed the same, if this assignment had not been made; however, subject to and governed by the terms of agreements between the Co-Assignees.

Assignor further hereby assigns, sells, and transfers, and has assigned, sold, and transferred to the Co-Assignees, their respective successors and assigns, the entire right, title, and interest in all countries of the world, in and to the invention and in and to the '041766 Application and all patents which may be granted therefor, and all national applications, regional applications, divisions, reissues, substitutions, continuations, in whole or in part, re-examinations, and extensions thereof, including the right to file applications and obtain patents for the invention in its own name, in all countries and including all rights of priority in all countries under the terms of any applicable international convention, insofar as its interest is concerned; and the Assignor hereby authorizes and requests the applicable patent office in each country of the world to issue all patents for the

invention, or patents resulting therefrom, insofar as its interest is concerned, jointly to the Co-Assigees, to have and to hold for the sole and exclusive use and benefit of the Co-Assigees, their respective successors and assigns, to the full end of the term or terms for which any and all of such patents for the invention may issue, to the same extent as the Assignor would hold and enjoy if this Assignment had not been made; however, subject to and governed by the terms of agreements between the Co-Assigees.

The Assignor further covenants and agrees to execute any and all patent applications, assignments, affidavits, and any other papers in connection therewith necessary to perfect such patent rights, and also agrees, at the reasonable request of either Co-Assigee, to testify in any legal proceedings, sign all lawful papers, make all lawful oaths, and generally do everything possible to aid said Co-Assigees, their respective successors and assigns, to obtain, maintain and enforce proper patent protection for said invention.

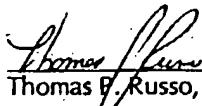
**IN WITNESS WHEREOF**, the Assignor and the Co-Assigees, by their respective duly authorized officers, have caused this Worldwide Patent Assignment to be executed.

Dated as of October 27, 2005.

**ASSIGNOR:**

[SEAL]

ATTEST:

  
\_\_\_\_\_  
Thomas F. Russo, Secretary

MMI GENOMICS, INC.

By:

  
\_\_\_\_\_  
Edwin C. Quattlebaum, President

**CO-ASSIGNEES:**

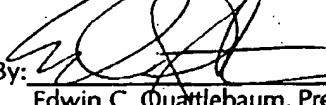
[SEAL]

ATTEST:

  
\_\_\_\_\_  
William E. Carlson, Secretary

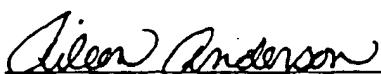
METAMORPHIX, INC.

By:

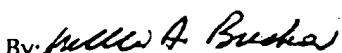
  
\_\_\_\_\_  
Edwin C. Quattlebaum, President

[SEAL]

ATTEST:

  
\_\_\_\_\_  
Name: Aileen Anderson

CARGILL, INCORPORATED

By: 

Name: William A. Buckner

Title: Corp. V.P.